

37 Lecture - PHY101

Important Mcqs

Who first proposed the idea of the particle nature of light?

- a) Isaac Newton
- b) James Clerk Maxwell
- c) Albert Einstein
- d) Niels Bohr

Answer: c) Albert Einstein

What is the name of the phenomenon in which electrons are emitted from a material when light of a certain frequency is shone on it?

- a) Photoelectric effect
- b) Compton effect
- c) Diffraction
- d) Interference

Answer: a) Photoelectric effect

Which experiment showed that X-rays scattered off a material have a longer wavelength than the incident radiation?

- a) Photoelectric effect
- b) Compton effect
- c) Diffraction
- d) Interference

Answer: b) Compton effect

What is the name of the concept that particles, such as photons, can exhibit both wave-like and particle-like behavior depending on the experiment?

- a) Particle nature of light

- b) Wave-particle duality
- c) Photovoltaic effect
- d) Coherent emission

Answer: b) Wave-particle duality

What is the practical application of the particle nature of light in photovoltaic cells?

- a) Generating coherent beams of light
- b) Creating population inversion in a material
- c) Converting light energy into electrical energy
- d) Scattering of X-rays

Answer: c) Converting light energy into electrical energy

How do lasers work?

- a) By creating a population inversion in a material
- b) By scattering X-rays off a material
- c) By converting light energy into electrical energy
- d) By exhibiting wave-particle duality

Answer: a) By creating a population inversion in a material

What is the name of the process by which photons transfer their energy to electrons in a material, allowing them to escape?

- a) Diffraction
- b) Interference
- c) Photoelectric effect
- d) Compton effect

Answer: c) Photoelectric effect

Which scientist discovered that light could exhibit particle-like behavior?

- a) Isaac Newton

- b) James Clerk Maxwell
- c) Albert Einstein
- d) Niels Bohr

Answer: c) Albert Einstein

What is the name of the beam of light created when excited atoms decay to the ground state, emitting photons with the same frequency and phase?

- a) Coherent emission
- b) Incoherent emission
- c) Photovoltaic effect
- d) Wave-particle duality

Answer: a) Coherent emission

What is the name of the concept that particles can exist in multiple states simultaneously?

- a) Particle nature of light
- b) Wave-particle duality
- c) Photovoltaic effect
- d) Coherent emission

Answer: b) Wave-particle duality